



Greenspring gas-fired condensing wall mounted continuous flow water heater

**Includes
ErP
ratings**



Worcester and you. Making a difference.

As part of the Bosch Group, Worcester products are designed and manufactured to provide customers with the highest levels of quality and reliability which are synonymous with the Bosch name throughout the world.

supported by an experienced technical services team which is able to provide comprehensive support and advice from designing system layouts through to installation.



As part of Europe's largest supplier of heating products, Worcester, Bosch Group has the UK-based resources and support capability to offer you the value-added solutions you deserve. Worcester employs a nationwide network of Service Engineers and technically trained Field Sales Managers

Worcester is dedicated to providing energy efficient gas- and oil-fired condensing boilers, as well as an extensive range of renewable technologies. All of our products have been developed and introduced with the aim of helping the UK to achieve the Government's efficiency targets.



BOSCH
Invented for life



The reception and main entrance
at our Worcester headquarters

ference.

“At Worcester we recognise the vital role you play in the specification and installation of energy efficient appliances in homes across the UK. We will continue to invest in our products, people, facilities and added value services to ensure you have all you require in order to deliver only the best solutions to your customers’ requirements.”

Carl Arntzen,
Managing Director,
Bosch Thermotechnology Ltd.

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The Greenspring condensing continuous flow water heater



Global responsibility for nature and the environment

As part of the Bosch group, Worcester is committed to environmental protection. With product development being prioritised in the interests of people's well being, the economical use of resources and environmental sustainability.

In just a few short years, Britain's domestic heating and hot water industry has changed dramatically.

With approximately 25% of the UK's carbon dioxide emissions being produced by home energy consumption, 75% of which is for the provision of heating and hot water, such change is not only inevitable but crucial.

Words and expressions such as "renewable energy", "sustainable technology" and "carbon footprint" have become part of everyday conversation and have been fuelled by extreme weather and stark television images.

Worcester, Bosch Group, whilst continuing to satisfy the daily demands for heating and hot water comfort, has taken a lead in developing solutions which reduce the impact on the environment by reducing CO₂ emissions – not only for today but well into the future.

With this in mind Worcester is proud to offer a high efficiency, high output gas-fired condensing continuous flow water heater for use with renewable energy sources or traditional fuels.

With an output of up to 50kW, the Greenspring water heater is ideal for use in high end residential, and both small and large commercial applications. It offers high energy-efficient condensing operation and up to 12 appliances can be cascaded in parallel offering a combined flow rate of up to 250 lts/min.

The Greenspring water heater can also be connected to a secondary circulation with a consequential reduction in water wastage.



The Greenspring water heater at a glance

		Greenspring CWi47 water heater
Part No.	NG	7 703 311 082
	LPG	7 703 411 078
Output kW	Min	6kW
	Max	50kW
Flow rate at 35°C Δ T		20.6l/min
Flow rate at 25°C Δ T		28.8l/min
Temperature control		✓
Natural gas		✓
LPG		✓
ErP Water heating energy efficiency class		A
ErP Water heating energy efficiency (declared load profile)		86% (XXL)

The Greenspring water heater features and benefits

Features	Benefits
Instantaneous and continuous hot water	On demand and sustained delivery
Condensing operation	High efficiency
Natural gas and LPG models	Fuel flexibility
Remote temperature control	Control flexibility
Accessory to raise maximum water temperature	Ideal for thermal disinfection
Direct integration with solar heating and heat pumps	Complete heating and hot water solutions from one source
Accessory to control cascade up to 12 units	Maximises output up to 247l/min at 35° rise

The features of the Greenspring condensing water heater



For more
information on ErP,
see pages 10-11.

Energy saving condensing design

The use of a condensing appliance contributes to achieving higher efficiency by incorporating a secondary heat exchanger. Heat within the flue gases is used to preheat the inlet water, and so recaptures energy that would otherwise be lost.

Applications

The Greenspring water heater has been optimised for use in domestic and commercial applications where there are high demands for domestic hot water (DHW).

At 50kW heating output, the Greenspring water heater offers the following performance:

- Up to 20.6 litres per minute with 35°C rise
- Up to 28.8 litres per minute with 25°C rise.

The Greenspring water heater can be used with natural gas or liquid propane gas (LPG) and can be installed in single units or multiple cascades of up to 12 units. Extended flue lengths of up to 8m are also possible, helping to provide even greater design flexibility.

Domestic

A Greenspring water heater is ideal for domestic applications where:

- There is increased demand for DHW – e.g. multiple bath, shower rooms etc.
- Space heating is being provided by another technology e.g. heat pumps
- Pre-heated water supply is to be used – e.g. by solar thermal.

Typical examples include larger homes and small hotels.

Light commercial/non-domestic

Ideal for light commercial or non-domestic applications with:

- High demands for DHW – e.g. multiple sinks, showers etc.
- No or little requirement for space heating – e.g. due to air conditioning, district heating etc.
- Where pre-heating of DHW is available.

Typical applications include restaurant kitchens, gyms, nurseries, hairdressers, hotels, nursing homes and smaller schools.

Commercial

Suitable for large commercial applications where there is:

- Consistent high demands for DHW – e.g. laundries, hospitals, etc.
- Very high cyclic demands for DHW – e.g. hotels, schools etc.

Greenspring's ability to use water pre-heated by renewable heat sources supports planning and investment requirements.

Such applications can take full advantage of the cascade controls that are part of the Greenspring offering. These controls provide the ability to deliver up to 250 litres of hot water a minute, on demand, with no need for costly hot water storage capacity.

Certain commercial applications may also take advantage of the ability to provide a hot water temperature of up to 84°C for sterilisation processes and secondary circulation.

Key benefits to the end user

High volumes of hot water

- Multiple showers, sinks and baths at the same time.

Cost savings

- Condensing technology for greater energy efficiency
- No requirement for storage tanks – reducing space and heat losses
- Ability to use existing Worcester Condensifit II™ wall-hung boiler flues.

Low environmental impact

- Energy-efficient condensing design
- Pre-mix combustion technology ensures low NOx emissions (<40ppm, Class 5)
- Suitable for use with pre-heated water from renewables
- Compatible with hot water secondary circulation to reduce water wastage.

Key benefits for installers

- Flexible design options
- Room sealed (RSF) appliance
- Compact, low-space design
- Natural gas and LPG versions
- Horizontal or vertical flue options
- Frost protection.

Ease of installation and maintenance

- Error codes clearly displayed on LCD screen
- Front mounted controls
- Wall mounted
- Easy access to components
- Compact design.

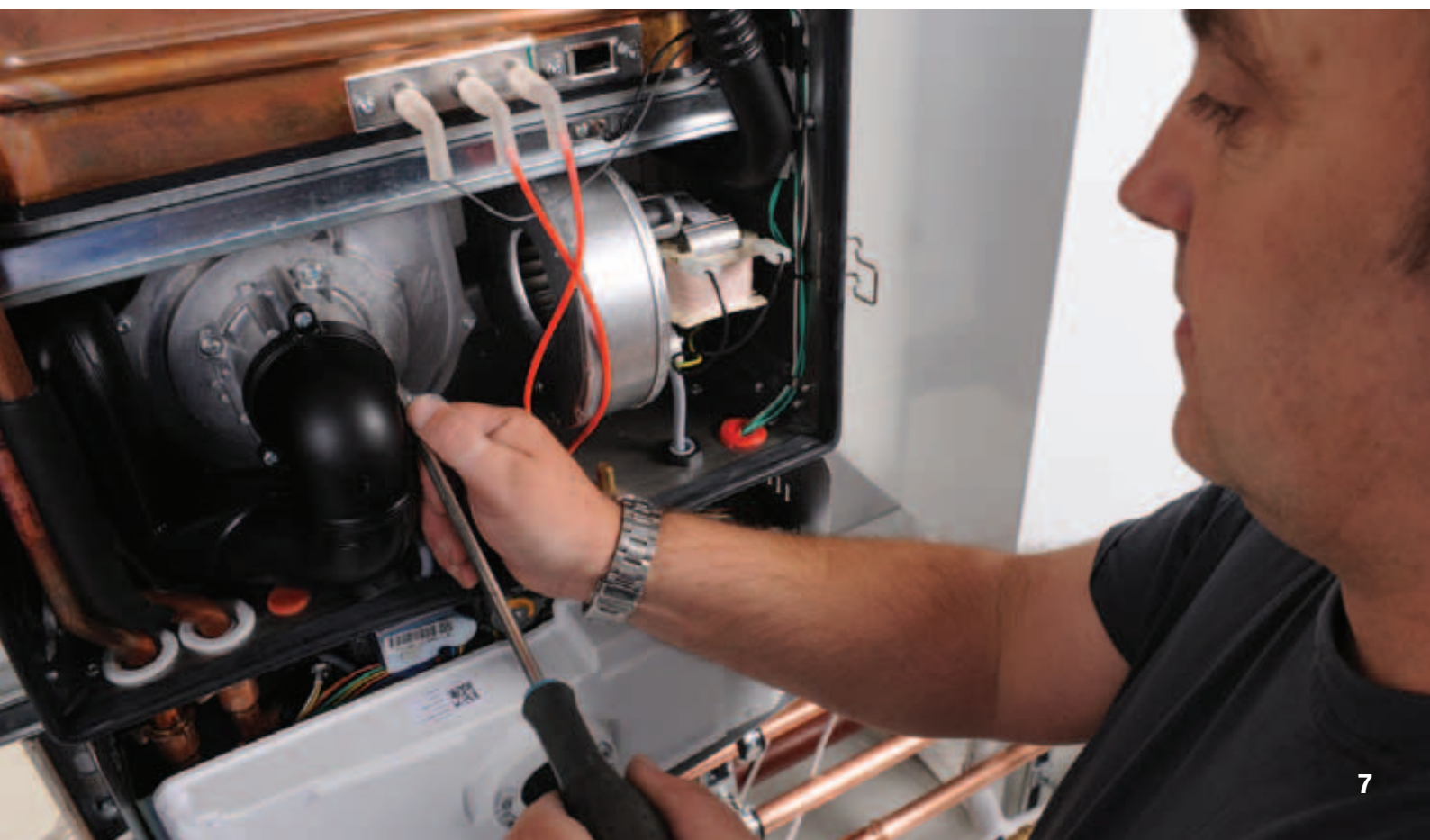
Cascading

Linking up to 12 water heaters together in parallel allows a maximum water flow of up to 250 litres per minute with a 35°C rise.

Worcester's intelligent cascading software will automatically rotate the lead unit after each 100 hours of functioning, distributing the workload equally across the water heaters in the cascade, increasing the longevity of the appliances.

Fluing

The Greenspring water heater uses the existing Condensifit II™ (80mm/125mm) concentric horizontal or vertical flue system.



System layouts

Secondary circulation

The Greenspring has a durable heat exchanger that allows it to withstand the frequent low-fire rates of a secondary circulation system.

To reduce water wastage, a secondary circulation system will circulate hot water through the pipework of the property to ensure hot water is immediately available when a tap is opened. This can be constant or tuned to suit user patterns.

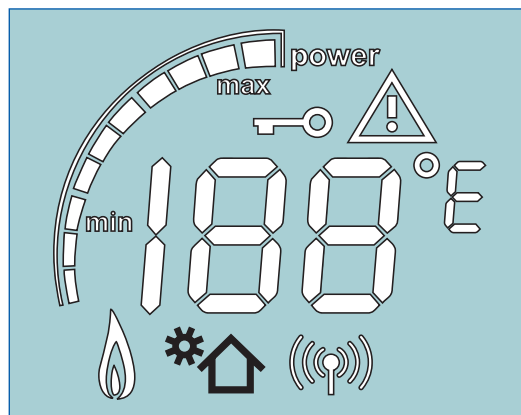
A thermostat placed in the pipework at a distant point to the heater activates a pump when water temperature drops below a set point, thus activating the appliance.

The pump will need to be purchased separately, however no additional accessory is necessary. A safety valve is mandatory and expansion vessel recommended for recirculating systems.

Use with renewables

A Greenspring water heater is designed to work with pre-heated water from, for example, a solar thermal system or heat pump(s). If the inlet water is within 5°C of the set-point on the LCD, the appliance will not fire up, simply letting the pre-heated hot water flow through to the outlets. In this case the solar symbol appears on the LCD (see below).

The burner will only fire when it can raise the water temperature by over 5°C at minimum output. The maximum inlet temperature to the water heater is 60°C.



Solar mode indicator

Accessories

Higher set point

With an optional kit, it is possible to set higher maximum water temperatures than the standard 60°C. The kit comprises of a 'jumper' placed on the PCB which raises the maximum temperature to 84°C.

This kit allows the water heater to meet the requirements of many demanding commercial applications such as thermal disinfection requirements for food and healthcare applications.

Remote control

A wireless remote control can be used to adjust the temperature up or down, and to read error codes. The radio frequency of the remote has a range of 30 metres. A maximum of 6 remote controllers can be programmed to control a single appliance.

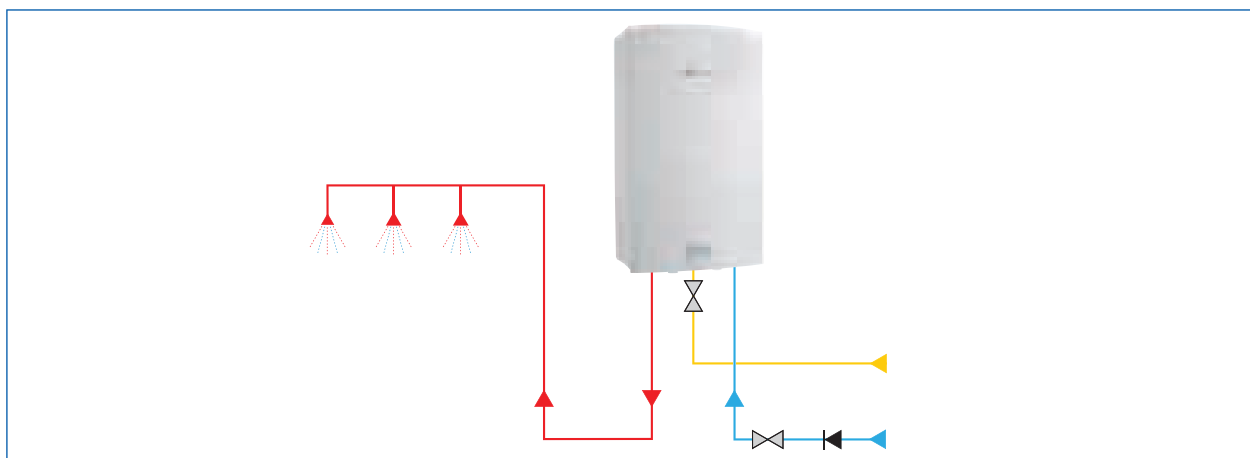


Cascade kit

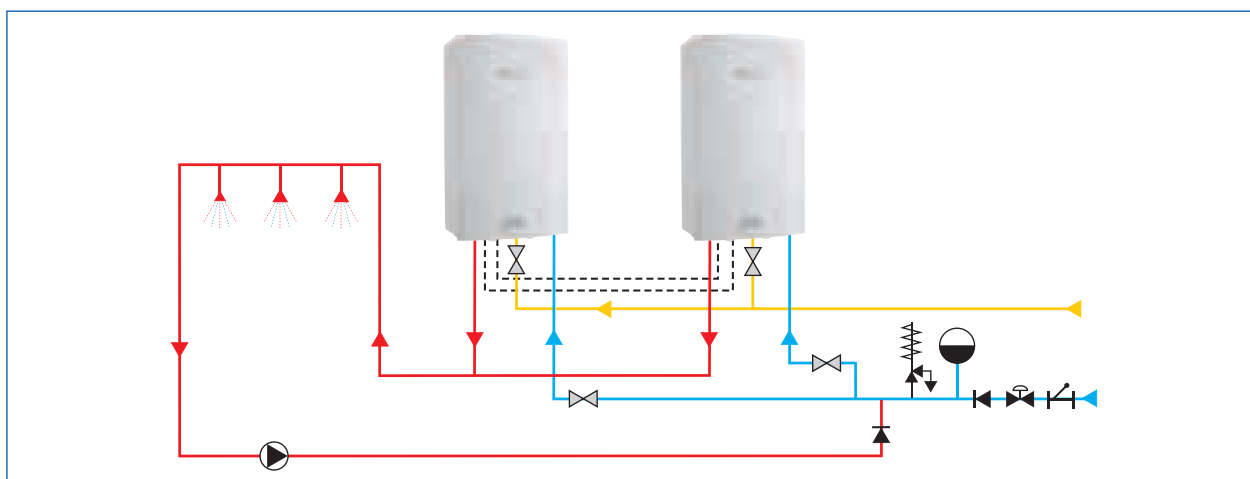
The cascade kit is a wiring accessory that allows the control of up to 12 water heaters to be connected together for an 'intelligent' (rotating lead) cascade.



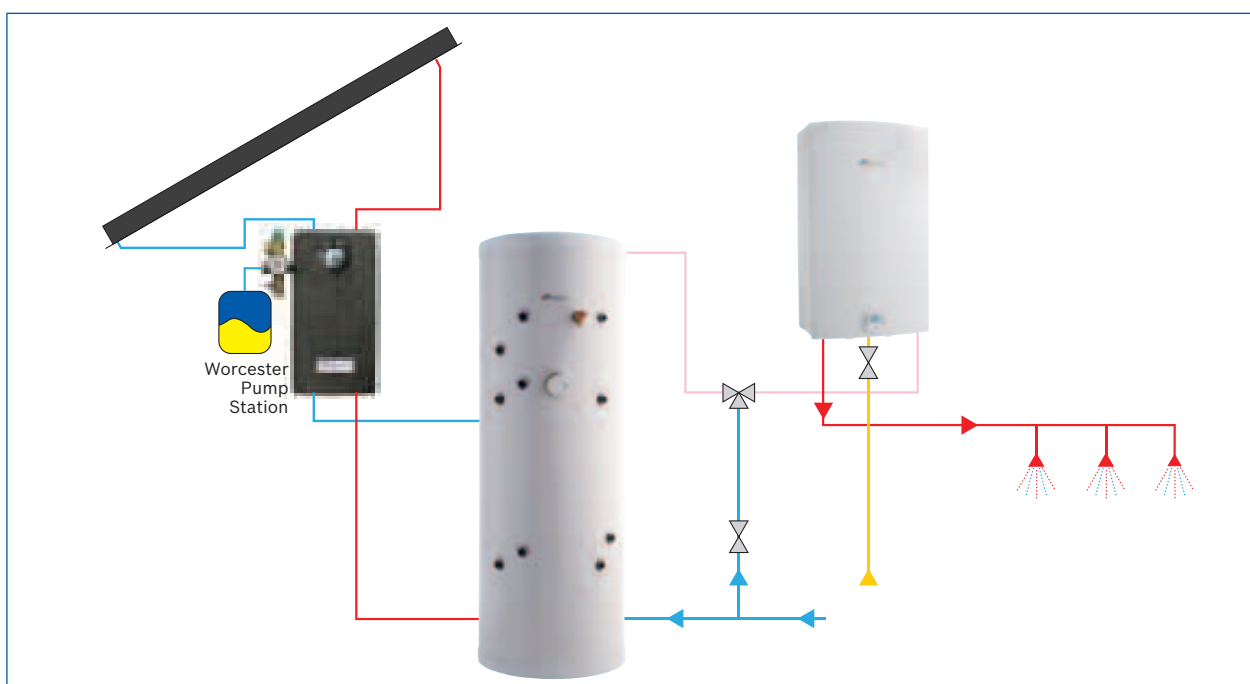
Greenspring water heater with appliance for Domestic Hot Water (DHW)



Greenspring water heater cascade system with secondary circulation



Greenspring water heater with a separate pre-heated water supply e.g. Greenskies solar thermal



Please note: Additional equipment may be required. This is shown for clarity. Please note that from 26th September, this configuration will require an ErP system package label – please turn to pages 10-11 for more information.

ErP^{easy} as ABC

What is ErP?

The ErP Directive, which is a new regulation set by the European Union, is designed to drive improvements in the efficiency and performance of heating and hot water products. Its purpose is to ensure that end users are aware of the level of energy efficiency inherent within their appliances. As such, the Directive will help improve the overall efficiency of the housing stock, while helping homeowners to reduce their energy bills. The ErP regulations cover boilers, combination boilers, water heaters and other heating appliances up to 400kW.



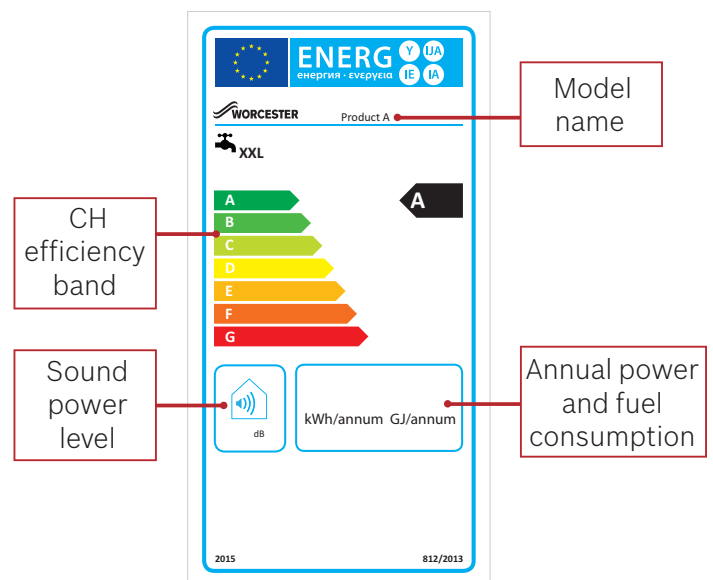
What is Energy Labelling?

The Energy Labelling involves a label which we are familiar with today on washing machines and televisions at the point of sale. The Energy Labelling regulations introduce Europe-wide energy labelling requirements for boilers, combination boilers, water heaters and other heating products up to 70kW and hot water cylinders under 500 litres.

How will the labelling scheme work?

The new Energy Labelling Directive will introduce new efficiency classes with from A to G alongside the existing efficiency ratings for products in the domestic and light commercial sectors.

Most condensing water heaters will fall within the A band, which requires them to achieve more than 85% hot water efficiency (at XXL load profile), while renewable technologies such as heat pumps will likely be in the A+ or A++ bands (depending on flow temperature).



What about systems that contain different products?

In these circumstances, there is a responsibility for providing a package label when combining a heating appliance with a temperature control and/or solar device, cylinder or a supplementary heating appliance (for example, a two boiler cascade).

The person who puts that package together will need to produce a package document known as a fiche (data table) and label that provides the combined energy efficiency rating rather than ratings of each individual component.

For example, this could be the merchant's responsibility if they supply a complete package under one part number or the installer if the items are bought individually under separate part numbers.

In this circumstance, Worcester will provide an online tool that makes calculating the overall package efficiency of a Worcester system effortless.

What if I cascade the Greenspring Continuous Flow Water Heater?

There is no requirement to create a package label when cascading multiple water heaters.

However, a package label is required when combining a continuous flow water heater with solar thermal.



ErP easy as ABC with Worcester

The Energy Related Products (ErP) Directive comes into force on the 26th September 2015. Worcester will have a number of measures in place to support you including:

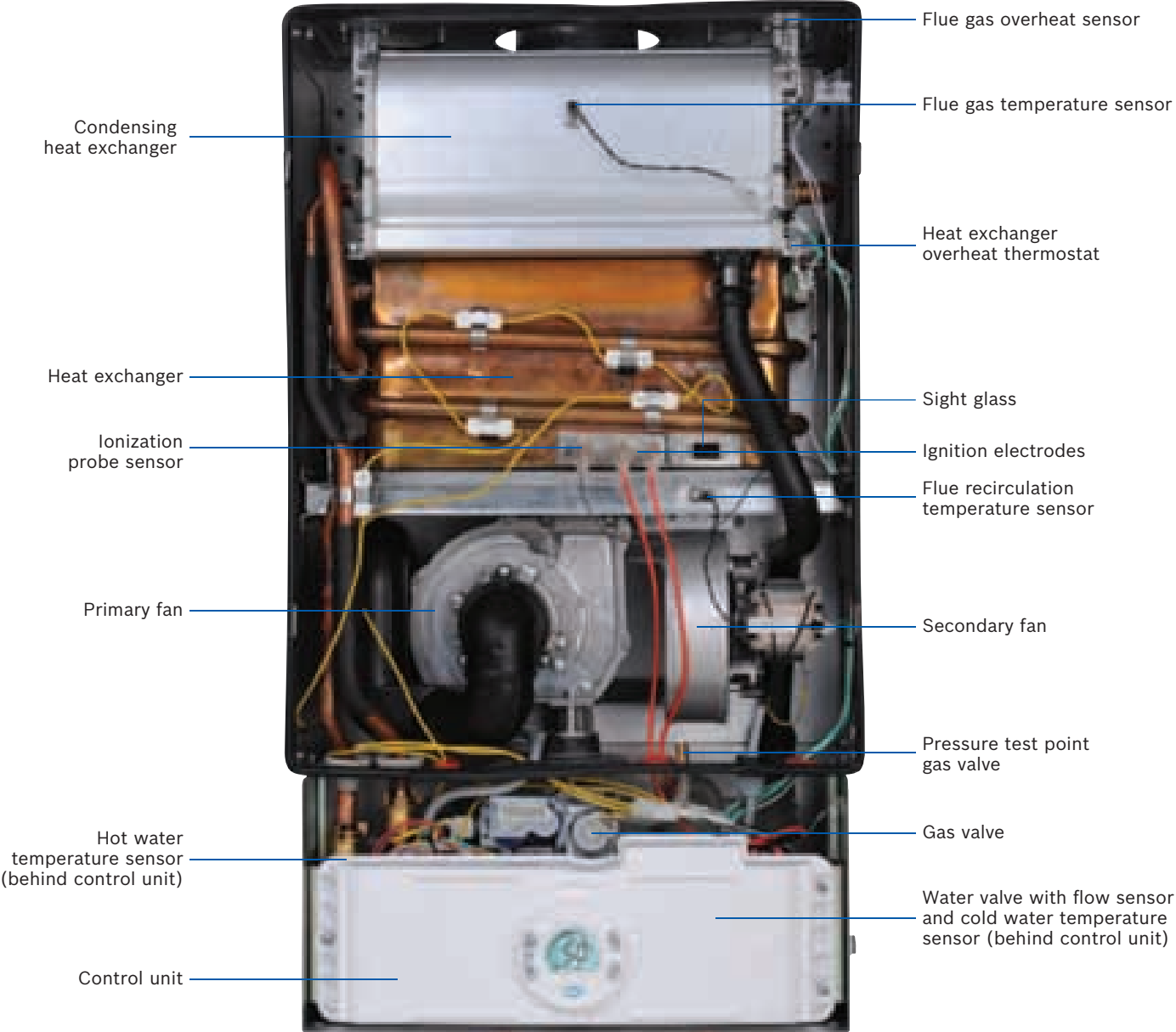
- ✔ An **online tool** which creates product and heating system labels
- ✔ ErP will be covered in all **Worcester training courses**
- ✔ **ErP experts** – our technical and customer support teams can answer all your questions.

ErP Technical Support: **0330 123 3641**

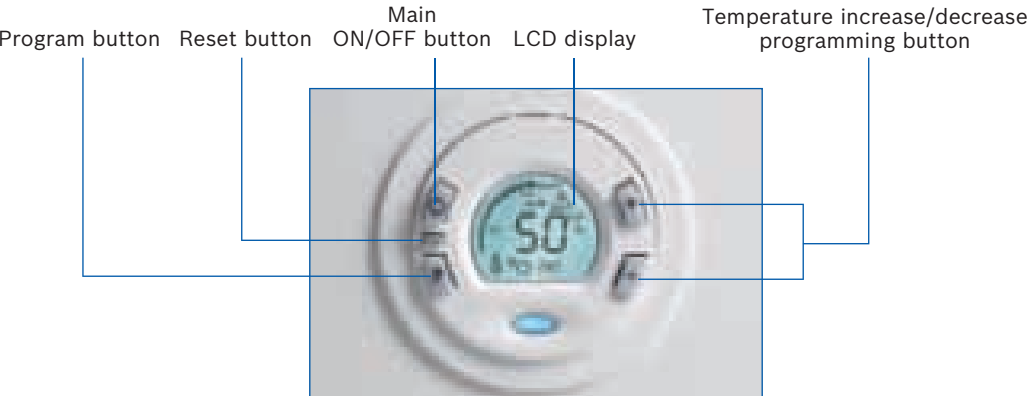
Email: **ErP-advice@uk.bosch.com**



Inside story



Controller with LCD display



	Greenspring CWi47 water heater
Height	775mm
Width	452mm
Depth	286mm
Weight – lift	34kg
Hot / cold water connections	¾" compression
Condensate connection	32mm plastic pipe
Gas connection	¾" BSPT
Nominal output	50.3kW
Maximum output	50.3kW
Minimum output	6kW
Natural gas pressure	20mbar
LPG pressure	37mbar
Natural gas consumption	5.09m³/h
LPG consumption	3.8kg/hr
Maximum water pressure	12bar
Minimum operating pressure	0.5bar
Minimum water pressure for maximum flow	2.5bar
DHW flow rate @ 35°CΔT	20.6l/min
DHW flow rate @ 25°CΔT	28.8l/min
Activation rate	1.9l/min
Internal siting	Yes
Frost protection	Yes
Maximum vertical flue	8,000mm
Maximum horizontal flue	8,000mm
NOx classification – natural gas	40ppm
NOx class	5
Efficiency	104%
ErP Water heating energy efficiency class	A
ErP Water heating energy efficiency (declared load profile)	86% (XXL)
Ingress protection (IP)	X4D

Guidance on installing the Greenspring condensing water heater

Siting of appliance

The appliances are only suitable for installing internally within a property at a suitable location. That location must be a fixed, rigid surface at of least the same size as the appliance and capable of supporting its weight.

No wall surface protection is required against heat transfer from the water heater. However, if the appliance is to be fitted in a timber frame building the guidelines laid down in BS 5440:Part 1 and the IGE “Gas Installations in Timber Frame Buildings” should be adhered to.

The appliance must not be installed in locations where the ambient temperature is expected to drop below 0 degrees. The appliances may be installed into an airing cupboard if required. However a non-combustible perforated material (max. hole sizes of 13mm) must be used to separate the boiler from the airing space. See section “Compartment Installation” on right.

Mounting on a combustible surface

All Greenspring wall mounted water heaters can be sited on a combustible surface. EN482, Section 6.4.1.3 states no means for protection of combustible surfaces are necessary if the temperature of the wall does not exceed the room temperature by more than 60°C. Testing of Greenspring gas-fired wall mounted water heaters has shown that this temperature is not exceeded.

Installation and service clearances

The minimum clearances shown opposite (fig 1) should be allowed for installation and servicing. Compartment ventilation would be required at these clearances.

Compartment installation –

for single appliances in domestic properties

The appliance may be installed in any room, although particular attention is drawn to the requirements of the IEE regulations applicable and in Scotland the electrical provisions with respect to installation in a room containing a bath or shower.

1. The room in which the appliance is installed does not require a purpose provided air vent.
2. If the appliance is installed in a cupboard or compartment with dimensions that allow the following minimum clearances, then no ventilation is required (see below):

Ventilation free compartment installation – minimum clearances

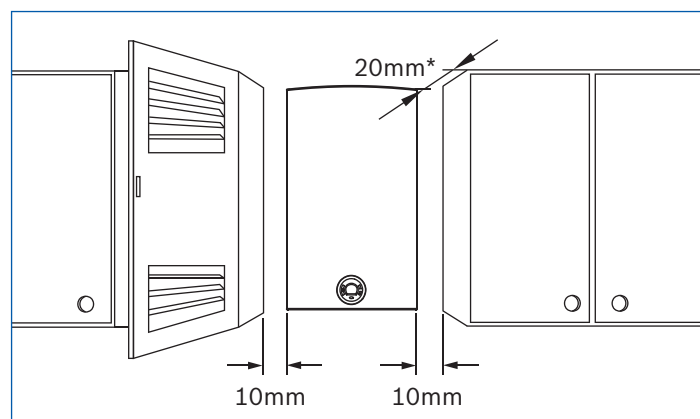


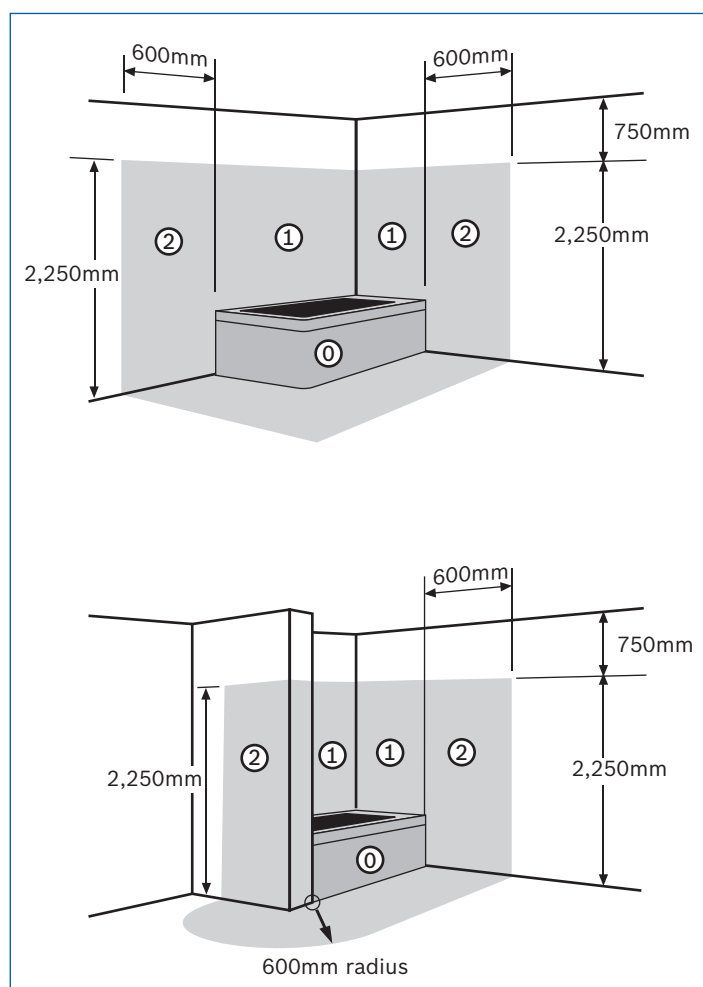
Fig 1 Minimum of 20mm required from/for front clearance

*To a removable surface

Important: bathroom locations and clearances as illustrated in the diagram below

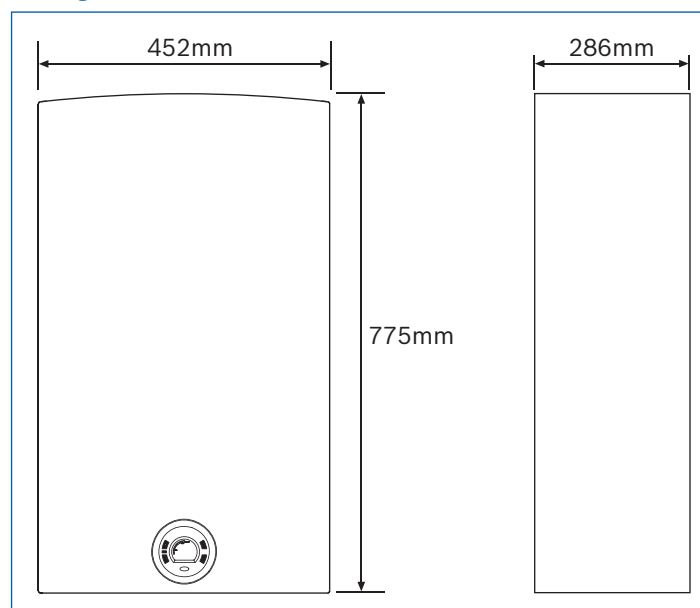
- The water heater must not be installed in zones 0, 1 or 2
- Any switch or appliance control using mains electricity must not be within reach of a person using the bath or shower
- Electrical switches, fused spurs and socket outlets must not be situated in the bathroom
- A water heater fitted with a non-mechanical timer or with no timer in the water heater can be installed in Zone 2 or outside the shaded area
- A water heater with a mechanical timer or RF mechanical timer with a room thermostat must only installed outside the shaded area
- Additional Residual Current Device (RCD) protection may be required.

Refer to the latest IEE wiring regulations.

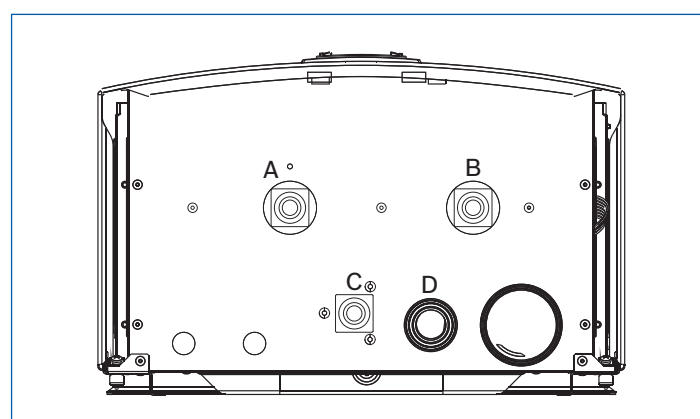


Conventional flued boilers must not be fitted in a bathroom.

Casing dimensions



Pipework connections



Pipework connections		
A	Hot water outlet	¾" dia.
B	Cold water inlet	¾" dia.
C	Gas connection	¾" dia.
D	Condensate outlet	32mm dia.

Condensate pipework – internal connections

Important points to consider when siting a condensate drainage pipe:

- **Where a new or replacement boiler is being installed, access to an internal “gravity discharge” point should be one of the factors considered in determining boiler location**
- **The condensate pipe must be a minimum of 32mm dia. plastic pipe**
- **The condensate pipework must fall at least 52mm per metre towards the outlet and should take the shortest practicable route**
- **Ensure there are no blockages in the pipe run.**

In order to minimise risk of freezing during prolonged cold spells, the following methods of installing a condensate drainage pipe should be adopted, **in order of priority**.

Wherever possible, the condensate drainage pipe should be routed and terminated so that the condensate drains away from the boiler under gravity to a suitable internal foul water discharge point such as an internal soil and vent stack. A suitable permanent connection to the foul waste pipe should be used. (see fig. 1)

Alternatively if the first option is not possible an internal kitchen or bathroom waste pipe, washing machine waste pipe etc. can be used. (see fig. 2)

Condensate pump

Where “gravity discharge” to an internal termination is not physically possible, or where very long internal runs would be required to reach a suitable discharge point, condensate should be removed using a proprietary condensate pump, of a specification recommended by the boiler or condensate pump manufacturer.

The pump outlet pipe should discharge to a suitable internal foul water discharge point such as an internal soil and vent stack, internal kitchen or bathroom waste pipe, washing machine waste pipe etc. A suitable permanent connection to the foul waste pipe should be used. (see fig. 3)

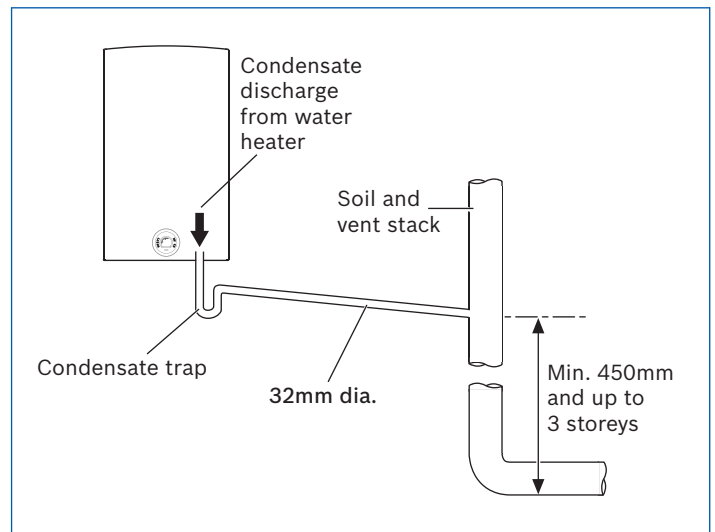


Fig. 1 Disposal to soil vent stack

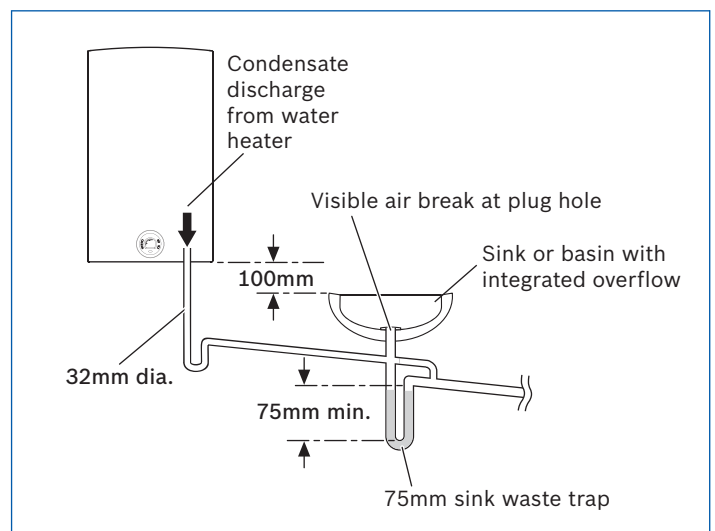


Fig. 2 Disposal to a waste pipe

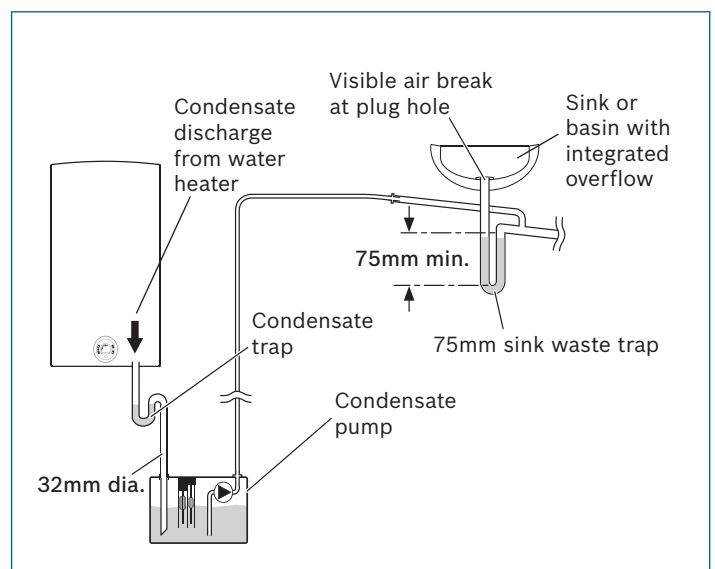


Fig. 3 Condensate pump disposal

Condensate pipework – external connections

Freezing conditions

- Pipework length should be kept to a minimum and the route as vertical as possible
- Where pipework is subjected to extreme cold or wind chill, a weather proof insulation should be used.

Condensate waste

- Care should be taken when siting a soak away to avoid obstructing existing services.

If no other discharge method is possible then the use of an externally run condensate drainage pipe terminating at a suitable foul water discharge point (fig. 4), or purpose-designed soak away (fig. 5), may be considered. Please see installation and servicing instructions for more details.

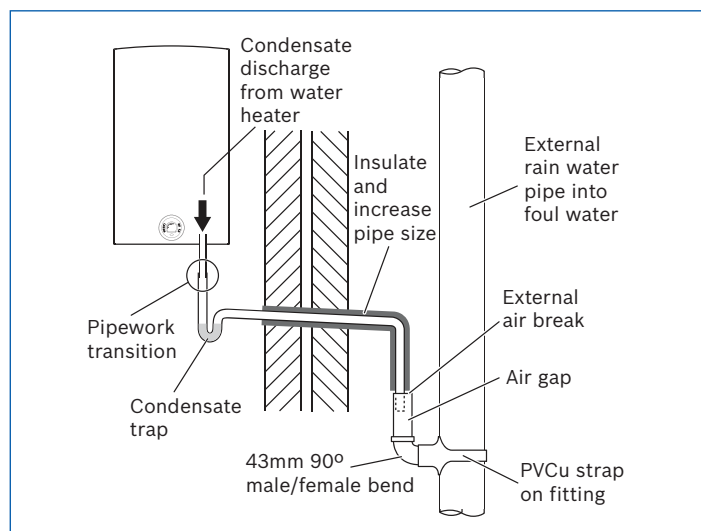


Fig. 4 Disposal into a rainwater down pipe

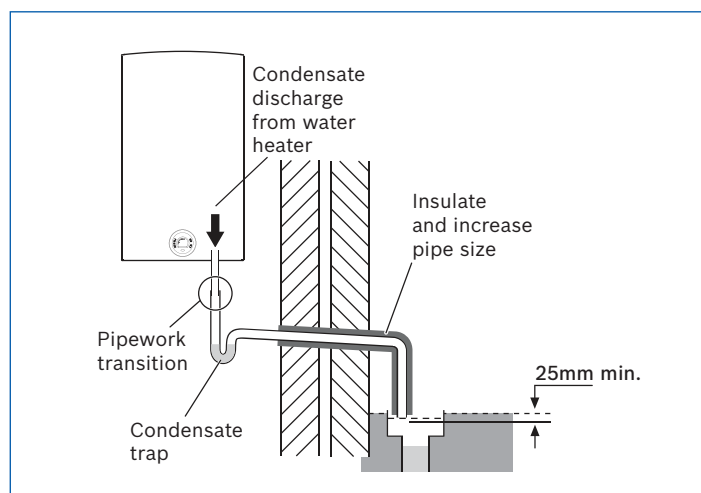


Fig. 5 External disposal

Condensate soak away (see fig. 6)

- The condensate drainage pipe may be run above or below the ground to the soak away
- The examples shown run above ground
- The soak away must use a 100mm dia. plastic tube with two rows of three 12mm holes on 25mm centres and 50mm from the bottom of the tube. The holes must face away from the house
- The tube must be surrounded by at least 100mm of limestone chippings to a depth of 400mm
- Minimum hole size for the condensate soak away must be 400mm deep by 300mm dia.

In situations where there are likely to be extremes of temperature or exposure, the use of a proprietary trace heating system for external pipework (that incorporates an external frost thermostat) should be considered. If such a system is used, the requirement to use 32mm pipe does not apply, however all other guidance above, and the instructions for the trace heating system, should be closely followed.

Unheated internal areas

Internal pipe runs in unheated areas such as lofts, basements and garages should be treated as external runs.

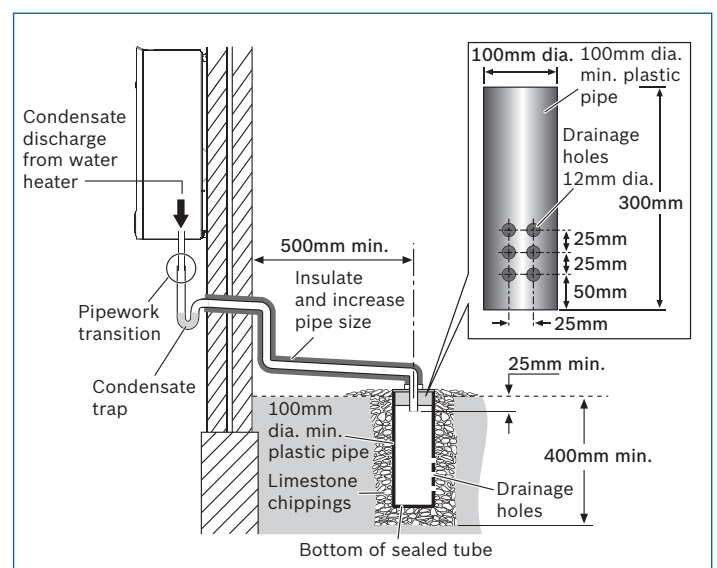
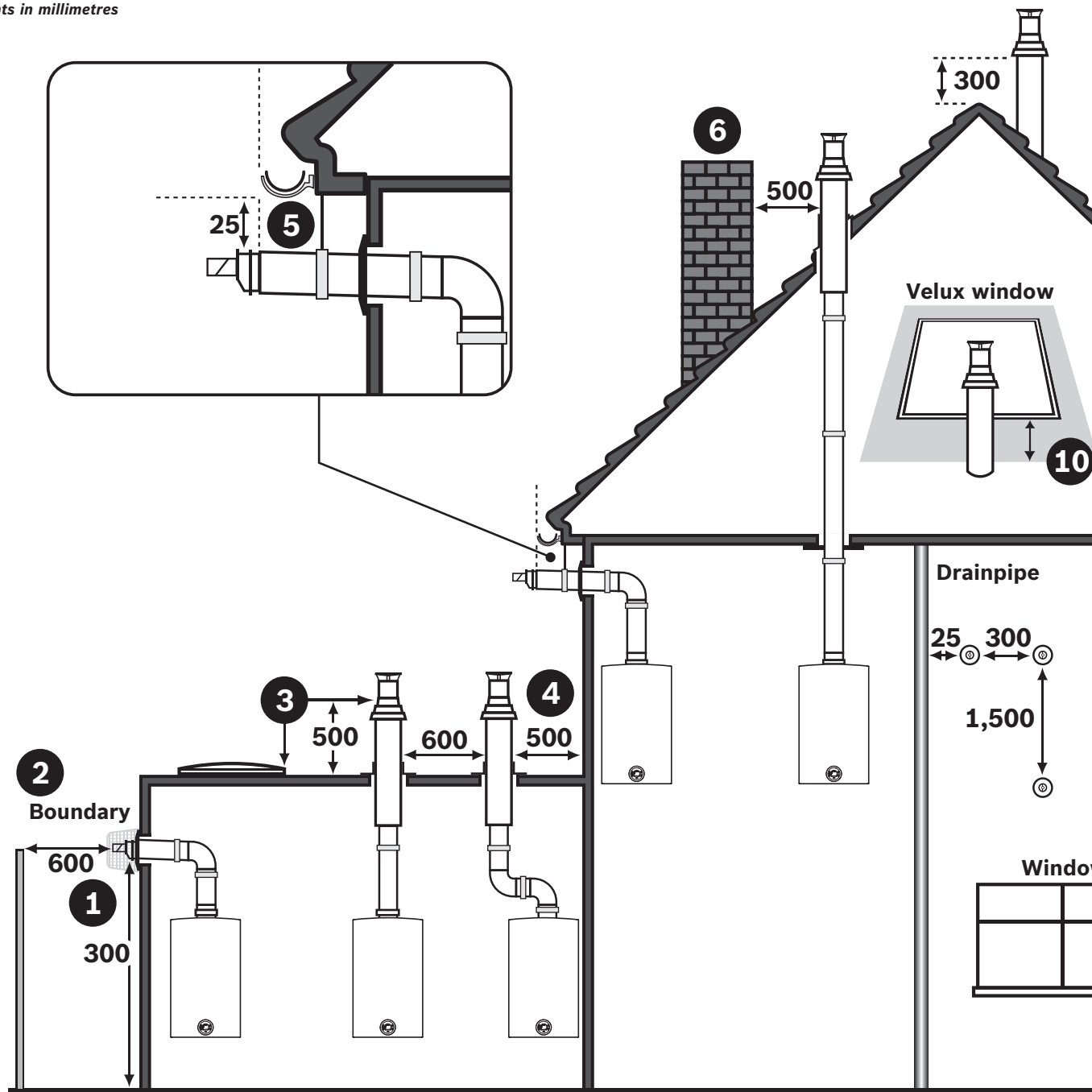


Fig. 6 Soak away

For full technical information on pipe size, insulation and different condensate pipework methods, please see Installation, Commissioning and Servicing Instruction Manual.

Horizontal and vertical flue terminal positioning

All measurements in millimetres



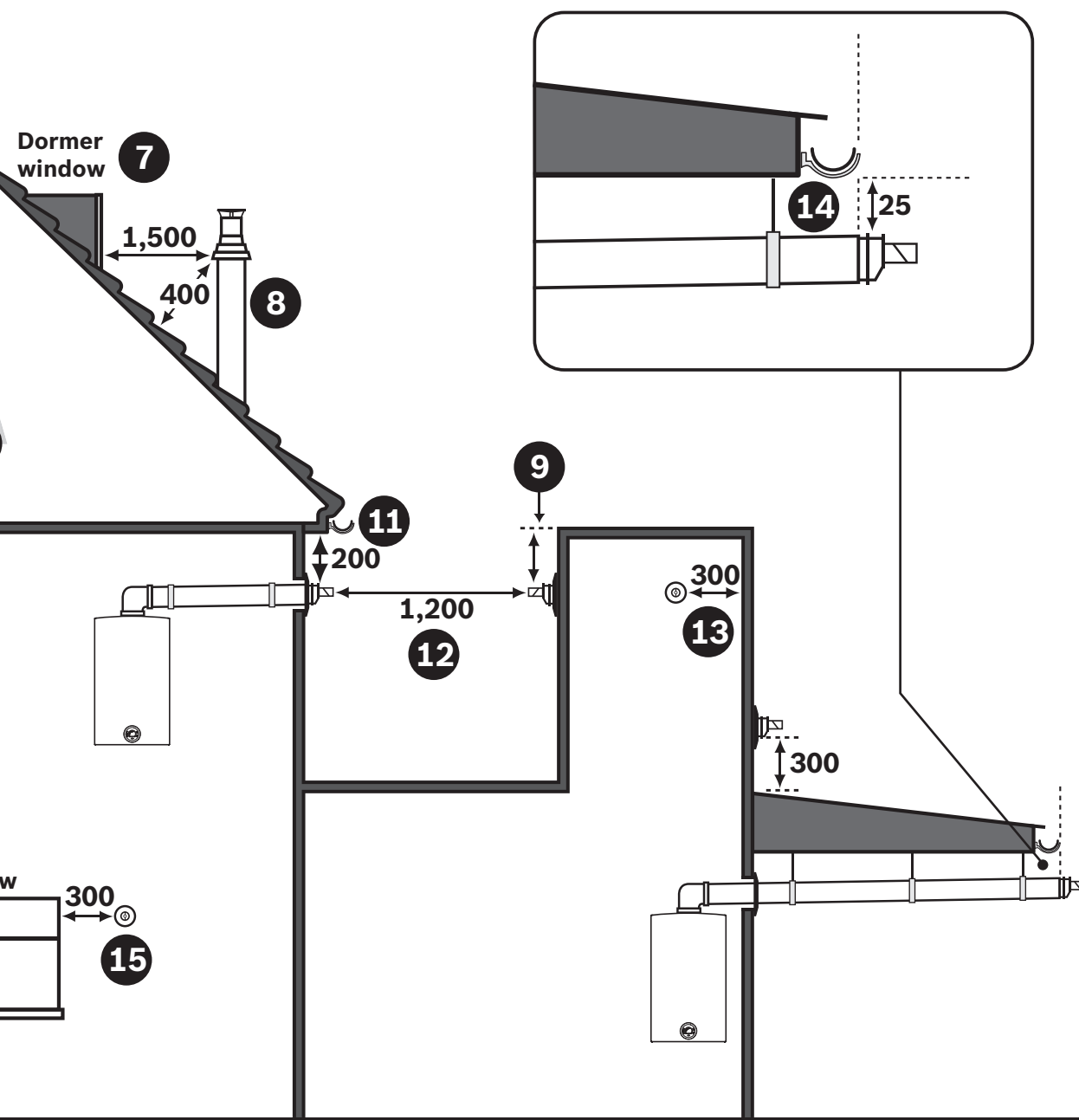
Note

- All measurements are the minimum clearances required
- Terminals must be positioned so to avoid combustion products entering the building
- Support the flue at approximately one metre intervals and at a change of direction, use suitable brackets and fittings

Flue bracket 125mm part number:
7 716 191 174 (125mm dia.)

Key to illustration

1. Flue clearance must be at least 300mm from the ground. Terminal guards must be fitted if the flue is less than 2 metres from the ground or if a person could come into contact with the flue terminal.
2. 600mm distance to a boundary, unless it will cause a nuisance. BS 5440: Part 1 recommends that care is taken when siting terminals in relation to boundaries.
3. 600mm minimum clearance from a skylight to a vertical flue.
4. Vertical flue clearance, 500mm to non-combustible building material, and 1,500mm clearance to combustible building material.



5. The dimension below eaves, gutters, pipes and drains can be reduced to 25mm, as long as the flue terminal is extended to clear any overhang. Any external flue joints must be sealed with a suitable silicon sealant.
6. 500mm clearance to any vertical structure on a roof, 600mm to room sealed flue or 1,500mm to an open flue.
7. 1,500mm between a vertical flue terminal and a window or dormer window.
8. 400mm from a pitched roof or in regions with heavy snow fall 500mm.
9. The flue cannot be lower than 1,000mm from the top of a light well due to the build up of combustion products.
10. 2,000mm below a Velux window, 600mm above or to either side of the Velux window.

11. 200mm below eaves and 75mm below gutters, pipes and drains.

12. 1,200mm between terminals facing each other.

13. 300mm to an internal or external corner.

Installations in car ports are not recommended.

14. The dimension below eaves, balconies and car ports can be reduced to 25mm, as long as the flue terminal is extended to clear any overhang. Any external flue joints must be sealed with suitable silicon sealant.

15. 300mm above, below and either side of an opening door, air vent or opening window.

Greenspring water heater horizontal fluing options

The Greenspring water heater uses the Condensfit II™ 125mm diameter telescopic flue kit. The following diagrams detail the permissible lengths.

Horizontal RS flue



Flue diameter	125mm
Minimum flue length	400mm
Maximum flue length	8,000mm

125mm dia. standard telescopic flue kit

- 1 x flue turret elbow
- 600mm (125mm dia.) of flue duct including terminal (as measured from centre of flue outlet)
- 1 x weather sealing plate
- 1 x internal plate

Part No. 7 719 003 702

Accessories

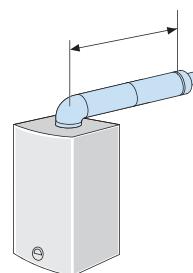
Components	Part No.	Description
	7 719 003 702	125mm dia. standard telescopic flue kit
	7 719 003 666	125mm dia. extension flue kit (960mm*)
	7 719 003 664	125mm dia. 90° bend
	7 719 003 665	125mm dia. 45° bend
	7 719 002 433	125mm dia. high level horizontal adaptor
	7 716 191 174	125mm dia. support bracket kit


*Dimensions when fitted

The following criteria should be noted when planning the installation:

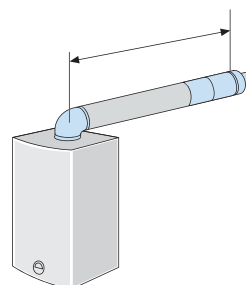
- The concentric flue system must be inclined at 3° (50mm per metre) from the appliance, to allow condensate to drain back into the water heater
- Because the appliance operates at high efficiency a white plume of condensation will be emitted from the terminal. Care must be taken when selecting the flue terminal position.



Standard horizontal flue assembly



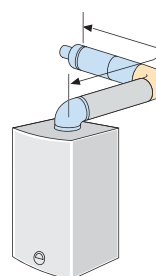
Components		
Part No. 125mm		7 719 003 702
Maximum lengths (mm) & no. of components required		
125mm	600	1




Extension flue horizontal



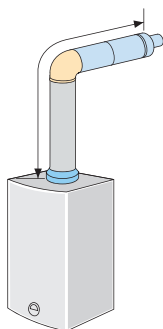
Components			
Part No. 125mm		7 719 003 702	7 719 003 666
Maximum lengths (mm) & no. of components required			
125mm	7,600	1	up to 7

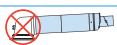



Extension flue horizontal using a second 90° bend



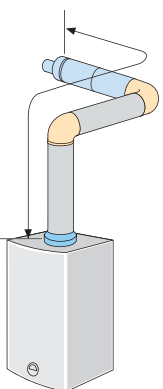
Components				
Part No. 125mm	7 719 003 702	7 719 003 666	7 719 003 664	
Maximum lengths (mm) & no. of components required				
125mm	7,600	1	up to 5	1


Extension flue horizontal and upwards



Components				
Part No. 125mm	7 719 003 702	7 719 003 666	7 719 003 664	7 719 002 433
Maximum lengths (mm) & no. of components required				
125mm	7,600	1	up to 5	1

Extension flue upwards and horizontal using a second 90° bend



Components				
Part No. 125mm	7 719 003 702	7 719 003 666	7 719 003 664	7 719 002 433
Maximum lengths (mm) & no. of components required				
125mm	7,600	1	up to 3	1

Note: The maximum flue length must be reduced by the following amounts for each bend used.

	Greenspring 80/125mm flues
45° bend	1,500m
90° bend	2,000m

Greenspring water heater vertical fluing options

The Greenspring water heater uses the Condensfit II™ 125mm diameter vertical RSF flue system. The following diagrams detail the permissible lengths.

Vertical RSF flue



Flue diameter	125mm
Minimum flue length	1,400mm
Maximum flue length	8,000mm

125mm dia. vertical balanced flue kit

- 1 x flue terminal assembly
- 1 x weather sealing collar
- 1 x fire stop spacer
- 1 x vertical adaptor

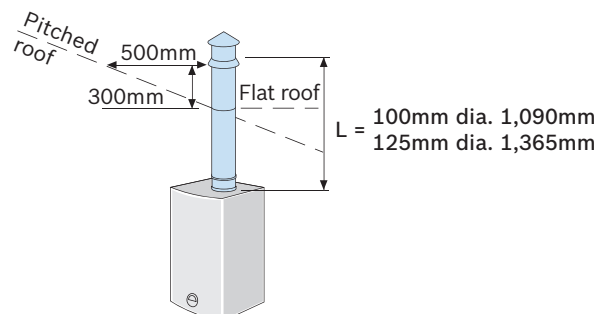
Part No. 7 719 002 431

Accessories

Components	Part No.	Description
	7 719 002 431	125mm dia. vertical balanced flue kit
	7 719 003 666	125mm dia. extension flue kit (960mm*)
	7 719 003 664	125mm dia. 90° bend
	7 719 003 665	125mm dia. 45° bend
	7 716 191 090	Flashing – flat roof
	7 716 191 091	Flashing – pitched roof

*Dimensions when fitted

Minimum height



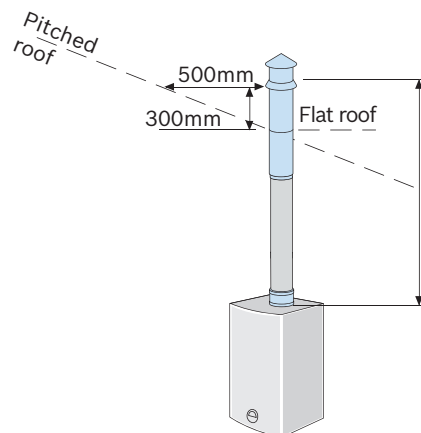
Components

Part No. 125mm	7 719 002 431
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Minimum lengths (mm) & no. of components required

125mm	1,400	1
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Vertical balanced flue system maximum height



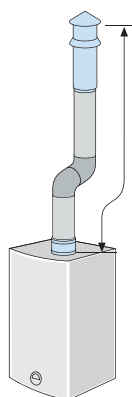
Components




Part No. 125mm	7 719 002 431	7 719 003 666
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Maximum lengths (mm) & no. of components required

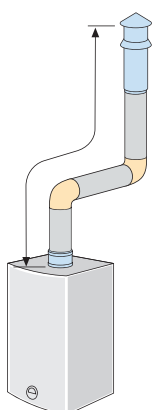
125mm	7,400	1	up to 6
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Vertical balanced flue system with two 45° bends



Components				
Part No. 125mm	7 719 002 431	7 719 003 666	7 719 003 665	
Maximum lengths (mm) & no. of components required				
125mm	7,400	1	up to 3	2

Vertical balanced flue system with two 90° bends

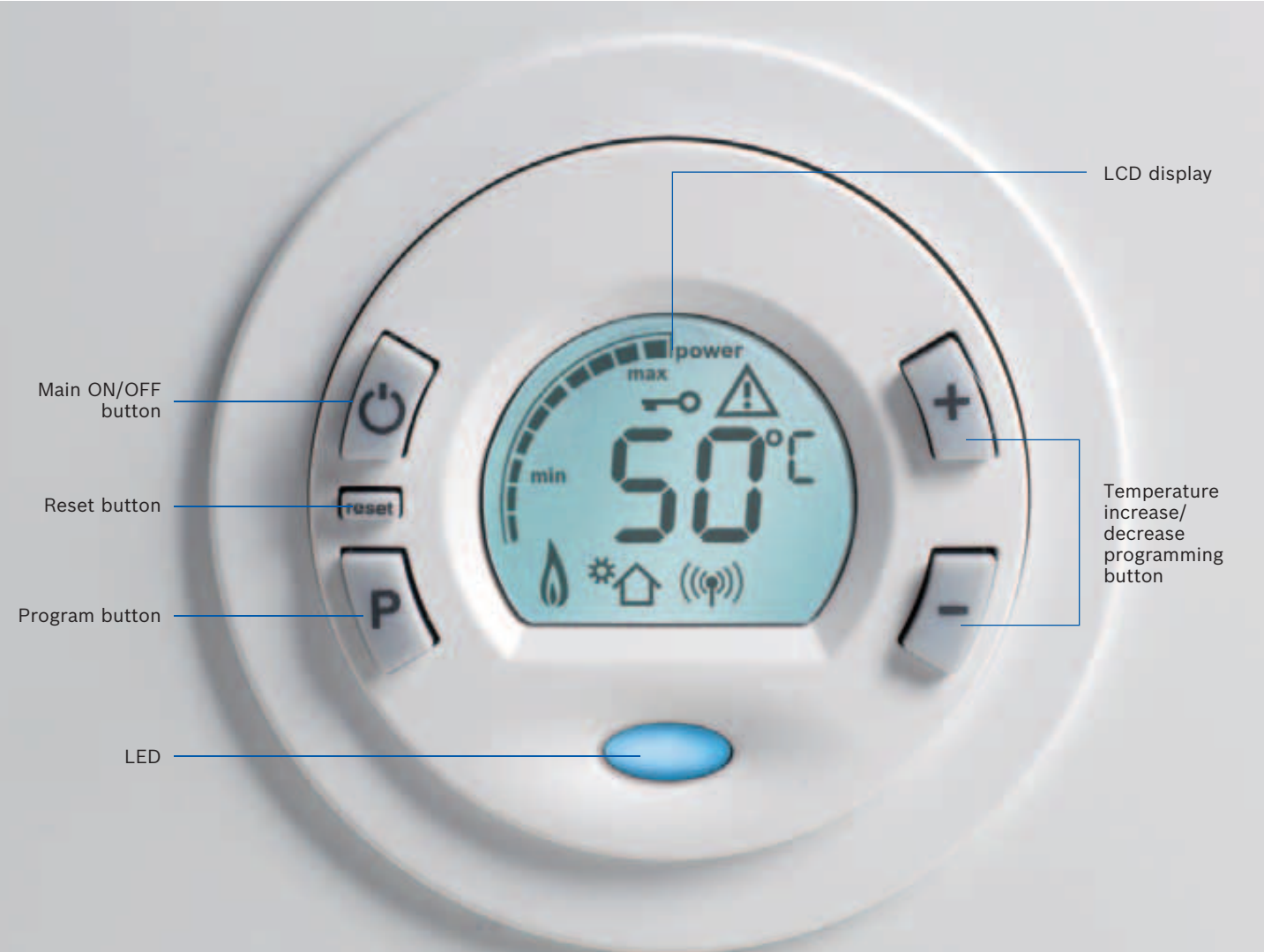


Components				
Part No. 125mm	7 719 002 431	7 719 003 666	7 719 003 664	
Maximum lengths (mm) & no. of components required				
125mm	7,400	1	1	2

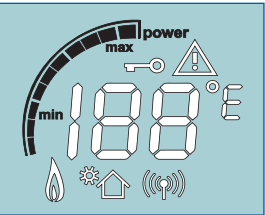
Note: The maximum flue length must be reduced by the following amounts for each bend used.

	Greenspring 80/125mm flues
45° bend	1,500m
90° bend	2,000m

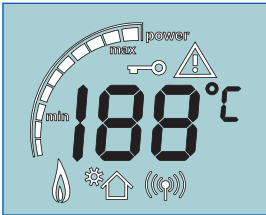
Water heater control panel



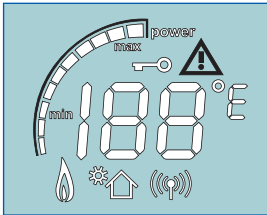
Functions



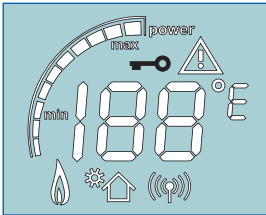
Power bar indicator (input)



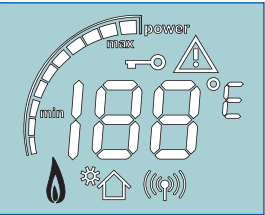
Temperature indicator



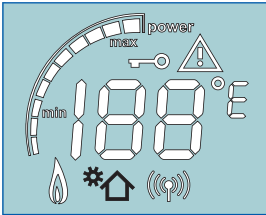
Error indicator



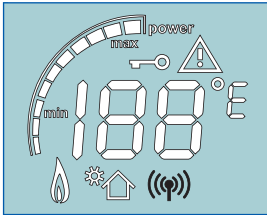
Locked condition indicator
(only with remote control)



Flame indicator



Solar mode indicator



Remote control indicator

Installation requirements

Installation of the Greenspring water heater must be in accordance with the relevant requirements of the Gas Safety (Installation Use) Regulations (as amended), current IEE Wiring Regulations, local Building Regulations, Building Standards (Scotland) regulations and bylaws of the local Water company and Health and Safety Document No. 635 (Electricity at Work Regulations 1989). It should be in accordance with the relevant recommendations of the following British Standards:

Domestic

BS 6798; BS 5449; BS 5546:1; BS 5440:1; BS 5440:2; BS 6891.

Commercial

BS 6644; BS EN 15417; BS EN 15420; IGEIUP/2; IGEIUP/10

Gas Safety (Installation and Use) Regulations. All gas appliances must be installed by a Gas Safe registered person in accordance with the above regulations. Failure to install appliances correctly could lead to prosecution.

The manufacturer's notes must not be taken in any way as overriding statutory regulations.

Valves and joints

It is very important that all valves and joints are able to sustain a working pressure of up to 10bar (150psi).

Natural gas supply

When on full demand the Greenspring water heater will require up to 5.09m³/hr of gas.

The gas meter and supply pipes must be capable of supplying this quantity of gas in addition to the demand from any other appliance being served. It is important that a gas supply pipe of at least 22mm diameter is used. Under no circumstances should the size of the gas supply pipe be less than that of the appliance inlet connection. The meter outlet governor should be capable of ensuring a dynamic pressure of 20mbar (8in wg) at the appliance. Particular consideration should be given to the resistance to gas flow created by elbows, bends etc. Pipework should be sized to overcome this resistance.

Liquid Petroleum Gas (LPG) supply

The Greenspring water heater is available in natural gas and LPG variants. The appliance when on full output demand will require up to 3.80kg/h of gas.

The gas tank or bottles must be capable of supplying this quantity of gas at a nominal pressure of 37mbar (14.8in wg) at the appliance. The table below shows the LPG gas discharge through varying lengths of pipe and the resistance to flow created by elbows, bends etc. Pipework should be sized to overcome this resistance.

Electricity supply

A 3amp fused three pin plug and unswitched shuttered socket outlet (both complying with BS 1362) or preferably a double pole isolator with a contact separation of 3mm in all poles supplying the appliance should be used.

The appliance electrical circuits are also protected by an internal 1.6amp fuse. The appliance must be earthed.

Mains cold water supply

Water Authority requirement

A direct mains cold water connection is permitted by Water Authorities. However, it is recommended that reference be made to local requirements. In the event of difficulty contact Worcester Technical Support Department.

Cold water connection

Connection should be made as shown in the pipework detail and the appliance installed generally in accordance with the layout shown on page 15.

Wherever possible the cold supply to the appliance should be the first connection off the mains supply, in order to minimise hot water flow reduction when cold water services are operated. The final 600mm of piping to the appliance should be of copper or steel only.

Cold water pressure

To achieve the stipulated flow rate a working cold water mains pressure of 2.5bar is required.

Hot water systems

Taps and valves

Hot and cold taps and mixing valves used with the Greenspring water heater must be suitable for operating at a mains pressure and temperatures of 60°C (150°F).

Use in hard water areas

In areas where hard water conditions apply, consideration may need to be given to the fitting of a device capable of preventing scale. In such circumstances the advice of the local water authority should be sought.

Guarantee

The Worcester Greenspring water heater is offered with a full 2 year guarantee* on parts and labour. Ongoing service and maintenance contracts can be arranged through the Worcester Customer Service Department.

Please contact our guarantee registration advisors on 0330 123 2552 or visit www.worcester-bosch.co.uk/guarantee



Greenspring water heater accessories

Accessories

Higher set point kit



Worcester Part No.
7 736 500 605

Intelligent cascade kit



Worcester Part No.
7 736 500 272

Wireless remote control (master)



Worcester Part No.
7 736 500 569

Wireless remote control (additional)



Worcester Part No.
7 736 500 699

Condensfit II™ 80/125mm horizontal & vertical flue accessories

Standard telescopic horizontal flue kit (125mm dia.)



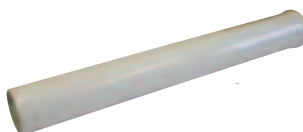
Worcester Part No.
7 719 003 702

Vertical BF kit (125mm dia.)



Worcester Part No.
7 719 002 431

1,000mm extension (125mm dia.)



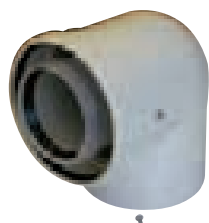
Worcester Part No.
7 719 003 666

45° bend (125mm dia.)



Worcester Part No.
7 719 003 665

90° bend (125mm dia.)



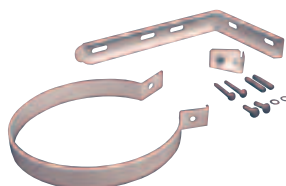
Worcester Part No.
7 719 003 664

High level horizontal flue adaptor (125mm dia.)



Worcester Part No.
7 719 002 433

Support bracket kit (125mm dia.)



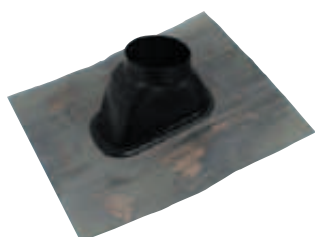
Worcester Part No.
7 716 191 174

Flat roof flashing kit (125mm dia.)



Worcester Part No.
7 716 191 090

Pitched roof flashing kit (125mm dia.)



Worcester Part No.
7 716 191 091

Total training experience from Land's End to John O'Groats

Worcester has always been committed to setting the industry standard for expert professional training and this is reflected in the scope and content of the courses, venues and options available.

We offer training on our entire range of domestic and commercial heating technologies as well as industry-led courses. All tuition is handled by expert heating specialists, combining classroom theory with, practical hands-on experience. Keep up-to-date with legislation and experience hands-on-training with our new technologies.

To increase your skills, expertise and value in the market place, trust Worcester's unique and proven total training concept.

Training centres throughout the UK

Worcester

Worcester's award-winning, state-of-the-art Training Academy is an innovative and spacious high tech training arena at our headquarters in Worcester. Facilities include open-plan domestic training areas with life-size single-storey brick buildings. Here installers can get to grips with Greenskies solar thermal systems working with Greenstar gas appliances, clearly demonstrating the importance of system design and operation.

Wakefield

Opened in Summer 2013, the Wakefield Training and Assessment Academy boasts a large gas laboratory which features our entire range of Greenstar gas-fired appliances, a flushing area, wet and dry boilers and a light commercial area with a cascade of Worcester GB162 boilers. There is a solar room with fully working components from our entire Greenskies solar range and a pitched roof for practical training, as well as a large commercial training room.

West Thurrock and Clay Cross

Further academies are located at West Thurrock in Essex and Clay Cross in Derbyshire, both of which offer a comprehensive choice of courses.

College-linked Learning

As well as offering training at our own centres, Worcester has established close partnerships with many colleges around the UK, equipping them with our latest products.

Worcester has worked closely with leading colleges and independent training centres for more than 20 years – a successful enterprise which in 2007 was enhanced further with the launch of the College Links Learning Scheme.

Mobile training

We can also bring training to you. We have mobile vehicles fully equipped with operational Greenstar gas-fired boilers, dry strip-down models and even a Greensource air to air heat pump. Our 7.5 tonne mobile oil vehicle is also available for hands-on oil product training and OFTEC assessments.

Call now for more information 0330 123 0166.



Commercial product courses

Along with Worcester's expanding range of commercial products, Bosch Commercial and Industrial Heating also offers training on a range of commercial technologies. Our commercial technical training officers have many years' experience as heating technicians and can deliver first-class training from renewables to Combined Heat and Power (CHP), as well as industrial boilers that reach up to 19.2MW.

Worcester also runs certified Commercial ACS training and assessment, equipping installers with the relevant qualifications for the changeover from domestic to commercial gas work.

As well as the extensive commercial appliance training we can offer at our centres, we offer CIBSE certified CPD seminars as well as on site training when you need it. For further information, contact our Training Helpline on **0330 123 0166** or email us at **training@uk.bosch.com**

Worcester commercial training courses

Greenspring CWi47 gas-fired condensing instantaneous water heater.

GB162 product overview.

GB162 domestic.

GB162 commercial.

Greenstar Heat Distribution Unit.

Commercial ACS training and assessment – CODNCO1

(includes CIGA1 - Indirect fired heating appliance and equipment, ICPN1 - Pipework in excess of 35mm and TPCP1A - Testing and purging) Certified by Logic Certification.

Bosch commercial training courses

GB312 & GB402 overview.

Solar thermal product overview.

GWPL Gas Absorption Heat Pumps overview.

CHP overview.

Commercial controls overview.



Worcester courses	CWi47 Water Heater	GB162 Overview	GB162 Domestic	GB162 Commercial	Heat Distribution Unit	CODNCO1
Duration	1 Day	1 Day	1 Day	1 Day	1 Day	5 Days
Cost	Free*	Free*	Free*	Free*	Free*	£780
Training course covers						
Specification	✓	✓	✓	✓	✓	Changeover qualification from domestic to commercial, including CIGA1, ICPN1, TPCP1A
Installation	✓	✓	✓	✓	✓	
Commissioning	✓	✓	✓	✓	✓	
Servicing	✓	✓	✓	✓	✓	
Maintenance	✓	✓	✓	✓	✓	
Course locations						
Worcester	✓	✓	✓	✓	✓	✓
Clay Cross	✗	✗	✗	✗	✗	✗
Wakefield	✓	✓	✓	✓	✓	Coming soon 2015
West Thurrock	✓	✓	✓	✓	✓	
College Links†	✗	✓	✓	✓	✗	✗
Mobile	✗	✗	✗	✗	✗	✗

*A holding fee of £65 applies to free courses and is refunded on attendance of the course. If a booking is cancelled more than 10 working days before the course date, the fee will be fully refunded. The fee is non-refundable if a cancellation is made less than 10 working days before the course date.

†Please contact Worcester Training for specific colleges.

Additional product and industry training courses

The diversity of products in today's heating industry gives you the opportunity to expand your expertise, whilst offering more choice to your customers. Worcester provides comprehensive training from all its academies on its entire range of technologies. Call us on **0330 123 0166** to order a full course training brochure or to book yourself onto a training course, alternatively, you can visit **www.worcester-bosch.co.uk/training**

Oil-fired product courses

- Greenstar Danesmoor & Heatslave II high efficiency condensing oil-fired boilers.
- Oil advanced fault finding.
- OFTEC 50.
- OFTEC 101/105e, OFTEC 600a and OFTEC 101/105e/600a.

Renewable product courses

- Renewables overview.
- Greenskies solar.
- Greenskies advanced solar.
- Introduction to heat pumps.
- Greenstore LECP ground source heat pumps.
- Greensource air to air heat pumps.

Worcester commercial product courses

- Greenspring CWi47 water heater.
- GB162 overview.
- GB162 domestic.
- GB162 commercial.
- Greenstar Heat Distribution Unit.
- Commercial ACS training and assessment – CODNCO1.

Bosch commercial product courses

- GB312 & GB402 overview.
- Solar thermal product overview.
- GWPL Gas Absorption Heat Pumps overview.
- CHP overview.
- Commercial controls overview.

Industry focused courses

- Hot water systems & safety.
- Chemical water treatment.
- Construction skills F-Gas training/assessment certification.
- IDHEE domestic heating design.
- Domestic ACS training and assessment – reassessment. CCN1 + 3 appliances.
- QCF Level 3 Award
 - Air source and ground source heat pumps.
 - Air to water and split air to water heat pumps.
 - Solar thermal.
- MCS Made Easy.
- Green Deal.
- LPG Changeover.
- WRAS Water Regulations.



A complete after-sales service

As part of the worldwide Bosch Group, Worcester strives to maintain the highest possible standards of after-sales care.

Worcester Contact Centre

Should you require support, our award winning Contact Centre team, based at our head office in Worcester, are ready to take your calls. Whatever your query our contact centre operators along with our nationwide team of engineers are ready to help you.

Tel: 0330 123 9559

Opening times

Monday – Friday: 7.00am – 8.00pm

Saturday: 8.00am – 5.00pm

Sunday: 9.00am – 12 noon

Bank Holidays: 8.00am – 4.30pm



Spares

Genuine replacement parts for all supported Worcester products are readily available from stock, or on a next day delivery basis. Visit www.worcester-bosch.co.uk/spares to find your local stockist.

Customer Technical Support

The Worcester Technical Helpline is a dedicated phone line – committed to providing a comprehensive service to complement the brand name and quality of our products. Our experienced team of technical experts provides answers to queries of a technical nature across the entire Worcester range.

Technical Support

Tel: 0330 123 3366

Fax: 01905 752 741

Email: technical-advice@uk.bosch.com

Opening times

Monday – Friday: 7.00am – 8.00pm

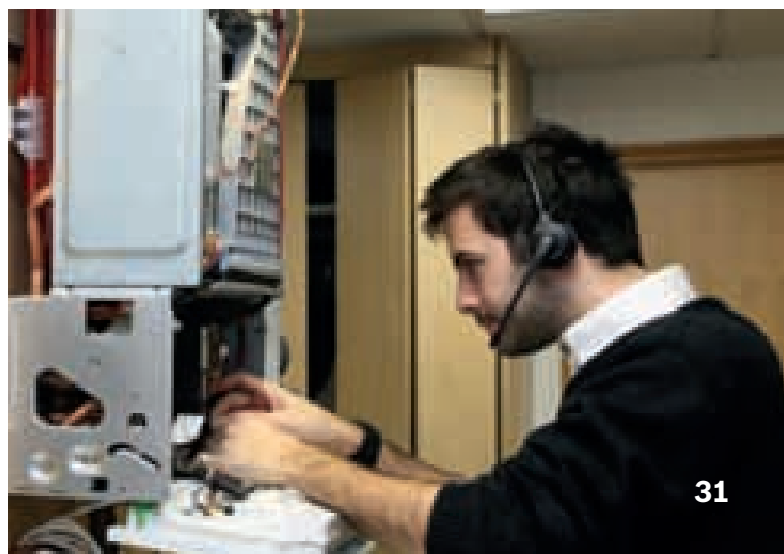
Saturday: 8.30am – 4.00pm

Bank Holidays: 8.00am – 4.30pm

ErP Technical Helpline

Tel: 0330 123 3641

Email: ErP-advice@uk.bosch.com



Useful numbers

Sales

Tel: 0330 123 9669
sales.mailbox@uk.bosch.com

Spare Parts

Tel: 0330 123 9779
spares.mailbox@uk.bosch.com

Technical Helpline (Pre & Post Sales)

Tel: 0330 123 3366
technical-advice@uk.bosch.com

Renewables Technical Helpline

Email: renewable-advice@uk.bosch.com
or telephone 0330 123 9229

ErP Technical Helpline

Tel: 0330 123 3641
ErP-advice@uk.bosch.com

Training

Tel: 0330 123 0166
training@uk.bosch.com

Literature

Email: brochure-request@uk.bosch.com
or download instantly from our website
or telephone 0330 123 9119

Customer Service

Engineer Appointments

Email: service-appointment@uk.bosch.com
or telephone 0330 123 9339

Service Enquiries

Email: service-enquiries@uk.bosch.com
or telephone 0330 123 9559

Guarantee Registration

To register your Worcester guarantee,
please visit our website
www.worcester-bosch.co.uk/registration,
download our guarantee
registration app or
telephone 0330 123 2552



Guarantee
app

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worcester-bosch.co.uk



In partnership with



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Worcester, Bosch Group,
Cotswold Way, Warndon,
Worcester, WR4 9SW